FINAL REPORT - Action Team 6
August 27, 1998

Research Information Needs

Executive Summary

The Research Information Needs Team is one of 6 Action Teams developed as a result of the Information Technology Moratorium and formation of the ARS Information Technology Management Committee co-chaired by Pam André and Ed Knipling.

The Research Information Needs Action Team 6 was formed and envisioned to be a scientist' driven study of research information needs. The purpose of the Action Team 6 was to determine how best to meet the information needs of ARS researchers at a reasonable cost.

Internet Connectivity, E-mail, File Transfer, Video and Audio Conferencing Intranets: An online Information Technology Needs Agency-Wide Survey of ARS scientists was conducted through the Internet on the Current Information Technology abilities and future needs, of which 868 scientists responded. Major conclusions were that the majority of ARS scientists have access to the Internet and most are satisfied with the speed of connection. They have excellent computer resources, most with Pentium processors indicating that they would have very good access to e-mail, file transfer, Intranets and literature databases.

Respondents suggested a need for better computer hardware and software support, a centralized "help desk" to answer computer questions, and convert the traditional secretarial positions into computer support/information technology specialists. Survey results suggested ARS scientists could fully utilize on-line desktop access on-line.

Online Support For Grant Seeking and Grant Deadlines: More than half of the respondents felt they had adequate access to extramural grant information, and obtained that information from a variety of sources including direct mailings, granting agency web pages, university grants support offices, and networking with colleagues. The narrative responses suggest that in-house grant information support to scientists is fragmented.

Because most of ARS research has traditionally been centrally funded, a move toward expecting partial support through grants would constitute a major cultural change for the Agency and many of its scientists. For scientists to become effective in obtaining extramural funds, there needs to be some Agency support .   An ARS Unit analogous to the sponsored programs offices at major research universities could provide this service.

Action Team 6 recommends that an Extramural Funds Support Office be established to demonstrate support for, and encourage seeking of, extramural funding for ARS research when and where appropriate. This would serve to consolidate fragmented efforts to provide fund seeking information to scientists, and ultimately should improve the percentage of proposals submitted receiving awards through the coordination of training on grantsmanship, providing timely information on deadlines, and assisting fund seeks with the process. We suggest that the office should have one FTE and some shared clerical and webmaster support, reside within the National Program Staff, and should coordinate closely with the Office of Technology Transfer and Technology Transfer Coordinators, the Extramural

Agreements Division of AFM, Area Offices, and the CIO (proposed Chief Information Officer).

Current Awareness, Retrospective Searches and Document Delivery: A study of the utilization Current Awareness service provided by NAL indicates it is possible to improve service at a much reduced cost. The Current Awareness Literature Service (CALS) provided by the National Agricultural Library (NAL) provides lists of publications relevant to the scientist's needs. The survey suggests that currently 12.4% of the respondents rely solely on CALS for computer literature searches. Since its inception, a number of studies have been conducted on the effectiveness of CALS and on identifying other resources used by ARS staff to obtain information on current research literature. These studies, one dating as far back as 1988, reflect both the need for mediated searches conducted by information professionals as well as the desire on the part of some researchers to conduct their own searches. This need was reaffirmed in a 1998 survey of research information needs conducted by the ARS Research Information Needs Action Team 6.

ARS and non-ARS USDA researchers and information professionals have used Current Contents since it became available in the late 1950's. It has been used to augment or to substitute for CALS since CALS became available as an established service. Initially available only in print, Current Contents is now available in a variety of formats (print, diskette, CD-ROM, and through the World Wide Web).   Subscribing to "Current Contents Connect" builds on the widespread use of the Internet and the World Wide Web by the ARS and non-ARS USDA community as a mechanism for obtaining and delivering information. Through this service, desktop web-access would be provided to ARS administrators, researchers, and information professionals for articles found within the most highly regarded journal literature. Augmenting "Current Contents Connect" with the CD-ROM version of Current Contents for NAL would enable CALS staff to continue to provide the current service to its customers. CALS staff would work with its customers to modify, establish, and/or delete search profiles; run these profiles against updates of the CD-ROM; and then would disseminate the results electronically to individual customers. This service would meet the needs of the ARS and non-ARS USDA community who, because of other commitments, time constraints, or preferences, cannot conduct searches themselves.

Action 6 Team recommends providing "Current Contents Connect" via the web to users, while continuing the CALS services offered through NAL using Current Contents on CD-ROM.

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Attachments:
1) Final Reports - 3 Subcommittees
2) Survey - Results Agency Summary
3) Survey Results by Area

Final Report
Subcommittee on Internet Connectivity, E-mail, File Transfer, Video and
Audio Conferencing, Intranets

Laura McConnell and Bob Silva

One of the objectives of the Research Information Needs Action Team was to assess the Internet connectivity level of ARS scientists. In addition, the Team wanted to determine how scientists were using the Internet and how ARS could improve scientist's access and utilization of this important tool. The following is a summary of the results from an agency-wide survey of all ARS scientists conducting during June and July of 1998. The survey was posted on the Internet. Even though paper copies of the survey were made available, most scientists responded using the on-line form. Therefore, the results of the survey may be somewhat biased towards those scientists that have relatively easy access to the Internet.

Internet Access:

Of those persons responding to the survey, 99.1% of scientists currently have access to the Internet and 75% of those are satisfied with the speed of their Internet access. This figure was surprisingly high. This indicates that ARS scientists have definitely moved into the information age and are utilizing the tools and communication options available through the Internet. Over 90% of scientists use the Internet for e-mail and world-wide-web (WWW) access. Other uses were file-transfer-protocol (FTP), 37%, Telnet, 34%, newsgroups, 26%, gopher, 21%, as well as list serves, search engines, on-line literature searches, and professional society information. Scientists generally spend between 1 and 3 hours per week utilizing the Internet, 23% of scientists spend 3-5 hours, and a smaller percentage ~10% spend more than 5 hours per week. A question was included on the survey to gauge the interest in Internet2. Forty-eight percent of scientists responded that they would be interested in Internet2, and most of those that were interested stated that they could utilize this tool for different types of modeling and creating specialized graphical images.

Another perhaps surprising result is that only 31% of ARS scientists have a USDA e-mail account. Forty-one percent have a university account, 5% have an other federal, state or local government account, and 7.5% have a commercial account. This high percentage of university accounts is representative of the strong ties between ARS and universities. The .edu account can also give ARS scientists access to special services from the university such as on-line databases for literature searches, homepage services, grants information, and document delivery.

Twelve percent of scientists are connected to the Internet through a modem. The speed of modems listed was in general at the high end of commercially available modems (>14.4 KB). Conducting literature searches and downloading large files via modem, however, can be a slow and tedious process. Results of the survey, however, appears to indicate that a large number of scientists now have a high speed connection to the Internet required for efficient utilization of on-line databases and search engines.

Only 20% of scientists pay for Internet access. Of those paying for Interent access most listed a cost of approximately $15-$20 per month with others listing much higher values of $200-

$500 per month presumably for an entire lab or unit. Other scientists listed the cost as part of their indirect research costs. One third of all scientists responding to the survey did not know if they were paying for Internet access with the remaining 48% stating that they did not pay for access.

Computer Resources:

ARS scientists appear to have excellent computer resources. 96% of ARS scientists have a computer at their desk. They overwhelmingly use the Windows95 operating system (77%) with only 10% using Macintosh systems. Most scientists use their computers primarily for word processing, data analysis, e-mail and other Internet activities, graphics, database management, literature searches, statistical analysis, and modeling. Other more unique uses are: monitoring control systems, time management, homepage management, and remote access to dataloggers in the field.

Seventy-seven percent of scientists have Pentium processors generally with >= 32 MB of RAM memory, 44% of those Pentium processors have a microprocessor speed of 90-166 MHZ and 27% have a speed of 200-266 MHZ. Most scientists, 49%, have a hard drive of 1-3 Gigabytes and 18% have 3-6 Gigabytes of space. Overall, 68% of ARS scientists are satisfied with their computer resources and support at their location. Those that were unhappy with their computer resources were asked what ARS could do to improve resources and support. A large number of the answers were a request for better computer hardware and software support. Specific suggestions that were repeated by respondents were for: a centralized "help desk" to answer computer questions, for converting the traditional secretarial positions into computer support/information technology specialists, providing specialists to help with computer upgrades and network management as well as software upgrades and training, and more funding for upgrading computer resources.

The results of this survey suggest that ARS scientists could fully utilize on-line, desktop access to a quality current awareness literature database as proposed by this committee.

Final Report
Subcommittee on Online Support for Extramural Fund Seeking and Grant Deadline Information

Andy Hammond (Stuart Hardegree), Steve Helmrich

The purpose of the Action Team 6 is to determine how best to meet the information needs of ARS researchers at a reasonable cost. The team will be expected to identify information needs, explore options and costs of electronic resources and recommend an appropriate system or service.

Status and Current Situation:

The information technology needs survey conducted by Action Team 6 contained two questions related to support for extramural fund seeking and grant deadline information. These questions and the survey results are given below.

"Do you feel you have adequate access to extramural grant information?"

Yes	61.8%
No	27.4%
Didn't answer	2.4%

"How do you obtain information regarding grant availability and deadlines?"

Mailings only	56.0%
Grant agency web pages	42.7%
University office of grant support	33.3%
Other (see appendix Q15)	

More than half of the respondents felt they had adequate access to grant information and obtained that information from a variety of sources including direct mailings, granting agency web pages, university grants support offices, and networking with colleagues. However, narrative responses to "question 15-other" and "question 30" suggest that in-house grant information support to scientists is fragmented coming from some Area offices or Centers but not all, coming from some Technology Transfer Coordinators but not all, and some being passed on to scientists by research leaders but not all. Some respondents did not feel that seeking outside funds was allowed or encouraged and some indicated that they did not engage in this activity. There were suggestions that ARS needs a grant support office to serve as a centralized source of information and support in seeking extramural funds. Alternatively, there was one suggestion that these functions were being handled by individual program units or by the scientists themselves and that ARS need not alter this system.

Because most of ARS research has traditionally been supported through the budget process, a move toward expecting partial support to come from outside sources would constitute a major cultural change for the Agency and many of its scientists. For ARS to become more effective in seeking and winning extramural funds, there needs to be some Agency support for assisting scientists avail of resources, become skilled at grant writing, and deal with the

process. An ARS unit analogous to the sponsored programs offices at major research universities could provide this service.

Options:

1. No change in Agency practice of encouraging extramural fund seeking when appropriate with reliance on area offices, program units, and individual scientists to obtain and disseminate information on availability of extramural fund programs.

   S The advantage of this option is that no action is required.
   S A disadvantage is that the cultural change toward pursuit of extramural funds to enhance base funded research will not be encouraged.
   S Another disadvantage will be that efforts to provide information on extramural fund seeking will remain piecemeal, fragmented, duplicative and inefficient.

2. Expand the function of the Office of Technology Transfer and expand the duties of Technology Transfer Coordinators to include support to scientists seeking extramural funds.

   S Advantages of this option are that it takes advantage of existing agency structure and could be accomplished within current funding levels.
   S Disadvantages would be that redirection of effort within OTT would detract from its mission and diminish the ability of Technology Transfer Coordinators to carry out their current charge and duties.

3. Create a new unit or office to support scientists seeking extramural funds.

   S A major advantage of this option is that it would demonstrate support for and encourage seeking of extramural funding for ARS research when and where appropriate.
   S Another major advantage of this option is that it would serve to consolidate fragmented efforts to provide fund seeking information to scientists. The quality and comprehensiveness of information should be improved as well.
   S A further advantage would be to improve the percentage of submitted proposals receiving awards through the coordination of training on grantsmanship, providing timely information on deadlines, and assisting fund seekers with the process.
   S The main disadvantage would be that new funding would be required to support this effort. A rough estimate of funding required would be $100,000 per year.

Recommendations:

The Action Team recommends that an extramural funds support office be established. Additional functions of this office should be assisting scientists to become skilled at grant writing and dealing with the pre and post award process. It is envisioned that this office could function with one FTE and some shared clerical and webmaster support. This office should reside within the National Program Staff and should coordinate closely with the Office of Technology Transfer and Technology Transfer Coordinators, the Extramural Agreements Division of AFM, Area Offices, and the CIO (proposed Chief Information Officer).

Final Report
Subcommittee on Current Awareness,
Retrospective Searches and Document Delivery

Stuart Hardegree, Claudia Weston, Steve Helmrich

Status and Current Situation:

Maintaining awareness of the literature is an essential element in the research program of every ARS scientist. ARS currently maintains a Current Awareness Literature Service (CALS) that is operated by the National Agricultural Library (NAL) and is available to all ARS scientists. NAL currently provides CALS service to approximately 1,000 USDA employees, 87% of whom are affiliated with ARS. The current CALS databases include: AGRICOLA, Aquatic Sciences and Fisheries Abstracts, Biological Abstracts, Chemical Abstracts, CAB Abstracts, Engineering Index, Food Science and Technology Abstracts, Government Reports Announcements, Life Sciences Collection, Water Resources Abstracts, World Textile Abstracts, and Zoological Record. NAL currently contracts with Knight Ridder to provide access to these databases through it's Dialog Alerts service. This service is based on actual number of searches requested which amounted to approximately 3600 per month in FY98. The CALS system currently costs USDA $976,000 per year, $800,000 of which is attributable to ARS. Of the total cost of CALS, approximately $200,000 per year goes to personnel and administrative costs and $800,000 into the cost of licensing access to the database.

Although the CALS system is available to all ARS scientists, it is used by less than half. Over half of ARS management units purchase other database products and services and many utilize university library resources for their current awareness needs. The ARS office of Administrative and Financial Management estimates that individual management units and regional research centers are currently spending over $250,000 per year on alternative current awareness services.

In 1997, a survey was conducted to evaluate CALS performance and use and it was determined that this system should be reassessed to determine the most cost effective way of providing for the current-awareness needs of ARS scientists. The Information Technology Management (ITM) Action Team 6 was asked to assess ARS information technology needs and to provide policy recommendations regarding information technology services that would be provided by headquarters.

In July, 1998, the ITM Action Team 6 conducted a survey of ARS scientists to determine current status, capabilities and needs regarding information technology. The following is a summary of survey results pertaining to current awareness, retrospective literature searches and document delivery. The full survey results are appended to this report.

- ▸ Technology for electronic access to information does not seem to be a problem within ARS. Almost all survey respondents have access to the Internet (99%) and the majority have relatively state-of-the-art computers at their desk (96%).

- ▸ Forty-four percent of survey respondents utilize CALS. Of this group, most (69%) find that

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the current service is always or frequently useful. Over 75% share their CALS results with others. Seventy-nine % of current users would not continue subscribing to the CALS service if the cost were as much as $100 to $500 per year per client.

▸ Even with access to the CALS system, 76% of survey respondents indicated that they also conduct their own computer literature searches. These alternative search services include free (38%) and commercial (21%) services on the Internet, commercial products on disk and CD-ROM (32%), university library resources (43%), and other services offered by NAL (34.7%).

▸ Most Survey respondents also use journal subscriptions (81%) and 49% browse library stacks to keep up on the literature.

▸ Thirty-one percent of Survey respondents require immediate knowledge of new publications. An additional 44% monitor the literature and maintain a list of publications in their field but could tolerate a delay in current awareness of 2-3 months.

▸ Seventy-four percent of Survey respondents feel that their current awareness search methods are frequently or always adequate for their needs.

▸ Some common suggestions for improving current awareness capabilities include:
Easier access to databases.
On-line capability for conducting personal searches.
Improved information regarding availability of products and services.
Training.

▸ Sixty-nine percent of Survey respondents indicated that they are satisfied with current capabilities for conducting retrospective literature searches. Suggestions for improvement were similar to those for improving current awareness: easier access, information on product and service availability and training.

▸ Most ARS scientist obtain reprints and other documents from libraries (75%), the NAL document delivery service (50%) or by requests directly to authors (48%). Seventy-four percent of scientists indicated that they were satisfied with their current access to documents.

▸ The NAL document delivery service was found to be extremely valuable, especially to locations that are not located near a research library. There were some suggestions that this system could be streamlined somewhat to make it easer to submit reprint requests.

▸ Sixty-nine percent of survey respondents are affiliated with a college or university that entitles them to access to library resources. Of this group, many have access to on-line databases, library reference services and CD-ROM products at no cost. Document delivery or copying services at these institutions, if available, is generally not free. Sixty-seven percent of those affiliated with a college or university have very easy or somewhat easy access to a research library.

▸ Only 55% of respondents maintain a personal computer database of relevant literature citations. Of this group, about 40% use software specifically designed for maintaining a

reference database. The remainder mostly use word-processing and spreadsheet software.

▸ Many respondents expressed strong support for the CALS system and would like to see it maintained. Many others have sought out alternative methods of maintaining current awareness either because they were unaware of CALS or preferred to use other commercial or free products and services. Many respondents requested more information on CALS and other alternative services.

Options:

Based on survey responses and input from Action Team members, six options were proposed for ARS current awareness options:

1. Eliminate CALS Service.

   ▸ Cost savings of $800,000 per year to ARS
   ▸ Shifts cost of current awareness to management units
   ▸ Eliminates primary current awareness procedure for many ARS scientists
   ▸ Puts unequal burden on management units at remote locations and/or locations that are not affiliated with a university research library

2. Maintain CALS in it's current form.

   ▸ Currently costs $800,000 per year and increases every year
   ▸ Depending upon the cost of the database, limits are placed on the number of citations one can retrieve per search. The average search is limited to 50 hits that are not based upon relevancy to search criteria
   ▸ Does not allow individual scientists to personally conduct search

3. Maintain CALS but replace the current Dialog/Knight Ridder database with Current Contents on CD and the AGRICOLA database.

   ▸ Estimate cost savings of $600,000 per year over current database
   ▸ Search profiles based on keywords rather than search codes
   ▸ Would record and pass on all search "hits"
   ▸ Database would derive from journal title pages, abstracts and keywords and covers a very large number of periodicals
   ▸ Database would lose capabilities for searching patent records and some government publications

4. Eliminate CALS but provide Current Contents Connect to all ARS scientists.
   cost savings of option 1

   ▸ Would still provide a current awareness search capability to all ARS scientists
   ▸ Full scientist control over search parameters and search frequency
   ▸ Automatic generation of reprint requests and reference database content
   ▸ Requires individual scientist training

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▸ Requires individual facility with program software and use of the Internet
▸ Would reduce current cost to management units for current awareness products

7. Maintain CALS in it's current form but also provide Current Contents Connect to all ARS scientists.

▸ All of the advantages of options 2 and 4
▸ Disadvantage of high cost of option 2 and additional cost of option 4

8. Maintain CALS but switch to Current Contents on CD database and also provide Current Contents Connect to all ARS scientists.

▸ All of the advantages of option 3
▸ All of the advantages of option 4
▸ Considerable cost savings overall but with expanded services
▸ Reduction in access to patent information and some government publications

RECOMMENDATIONS

Current Awareness:

The Action Team recommends Option 6. Under this option, CALS would continue but with improved services and lower cost and increased flexibility. The office of Administrative and Financial Management estimates that CALS database costs can be reduced by approximately $600,000 per year by switching to Current Contents on CD. The cost of obtaining Current Contents Connect for every ARS scientist is estimated to be approximately $160,000 per year. It is also estimated that ARS management units currently spend over $250,000 per year on current awareness software that would no longer be purchased when Current Contents Connect is made available. The proposed system is also compatible with commercial literature database software and can be used to generate reprint requests directly from the authors. Current CALS users will continue to get existing services but there will no longer be a limit on the number of database "hits" that are recorded and sent to a given scientist.

Disadvantages of this option are that some disruption of services will occur when the transition takes place. CALS keyword-search profiles will have to be reconstructed to make them compatible with the new database. Scientists that choose to use Current Contents Connect will have to go through a period of training. Differences also exist between the current and proposed databases and some information sources may no longer be accessible by the search engines.

Retrospective Searches:

NAL staff currently conduct retrospective searches for ARS scientists upon request. Retrospective searches are also available to many research units that are affiliated with a university research library. The Action Team does not feel that any changes in retrospective-search policy or capabilities are warranted at this time. The ARS Libraries-2000 committee has been asked to address the current status and future needs for these products and services and will have access to all of the data generated by the ITM survey regarding this issue. The ARS Action Team recommends that ARS encourage management units to take

advantage of free search services at affiliated university libraries in order to reduce the administrative burden on NAL.

Document Delivery:

NAL currently provides a document delivery service for ARS scientists. The Action Team recommends, however, that individual management units be encouraged to request reprints directly from authors as part of their current awareness strategy. Reprint requests are relatively easy to generate with the Current Contents software proposed under Option 6. The Action Team also recommends that scientists take advantage of resources available at affiliated research libraries if they are easily accessible.